

REMARKS

Claims 2-14 and 16-26 are all the claims pending in the application. Claims 8-13 have been withdrawn. The Examiner himself has “constructively” elected to withdraw claims 20-26 from consideration (see page 2, last paragraph of the Office Action continuing to page 3). However, Applicant respectfully requests (elects) method claims 20-26 to continue in prosecution of this application. To further prosecution, however, Applicant will address below the Examiner’s rejections using the cited art, should the Examiner consider that the cited art has relevance to method claims 20-26. In addition, notwithstanding Applicant’s election of claims 20-26, Applicant believes that based on the remarks below, claims 2-14 and 16-26 are allowable.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The Examiner states that the drawings must show every feature of the invention specified in the claims, and therefore the structure of claims 4 and 16 must be shown or the features canceled from the claims. Applicant respectfully traverses this objection. The Examiner has not objected to claim 4 previously. Claim 4 was amended only to recite --orifices consists of two-- rather than “orifices comprise at least two.” The Examiner does not point out which structural portion is missing from the drawings and Applicant submits that the injection nozzles and nozzle body are clearly shown, thus meeting the requirements of under 37 CFR 1.83(a). Applicant makes the same traversal for Figure 14. As such, the Examiner is kindly requested to withdraw the objection, or specifically

cite which features of claims 4 and 14 cause the drawings not to comply with 37 C.F.R. § 1.83(a).

Claim Rejections - 35 USC § 112

Claims 2 - 7 and 14 stand rejected under 35 U.S.C. 112, second paragraph. As discussed above, Applicant respectfully withdraws these claims from consideration, should they not be allowed, in order to prosecute claims 20-26. To address the rejection, however, Applicant observes that the Examiner refers to claim 14, line 9 which recites “a plurality of mutually spaced independent separation triggering elements” and states that it is not understood in what sense the elements are “independent”. Applicant observes that this statement would apply equally to claim 20.

For the Examiner’s understanding, Applicant respectfully refers the Examiner to page 10, of the November 24, 2003 Amendment which provides that, as shown in Figure 1, the separation triggering elements are independent in the sense that in the injection cross-section, the separation zones do not cross.

The Examiner also states that claim 6 recites the distance D as a function of the location of spontaneous separation of flow at sea level. However, the location of spontaneous flow is a function of operating parameters such as the pressure and velocity of the gas within the rocket nozzle, which parameters are beyond the scope of the claim. Thus, the Examiner states that this renders the claim indefinite.

Applicant notes that this rejection was made in the January 10, 2002 Office Action, over two years from the date of this rejection, and appropriately responded to in the April 10, 2002 Amendment (and seemingly accepted based on subsequent Office Actions). Applicant herein incorporates those same remarks. Applicant further observes that claim 21 recites that the “injection cross section is arranged at a distance D from the throat which is substantially less than a distance of spontaneous separation of the flow at an altitude of the rocket engine during said injection.”

Furthermore, based on the multiple objections and rejections throughout the history of prosecution of this application, Applicant kindly requests the Examiner to avoid piece-meal examination of the application, which Applicant believes is USPTO policy.

Claim Rejections - 35 USC § 102

Claims 2, 3, 6, 7, 14, 18 and 19 stand rejected under 35 U.S.C. § 102(b) as being structurally anticipated by Mueller. As discussed above, Applicant respectfully withdraws these claims from consideration, should they not be allowed, in order to prosecute claims 20-26. In response to the Examiner’s rejection of these claims, Applicant submits that the Examiner repeats similar past arguments and further provides that whether or not a three dimensional separation of flow occurs is merely a desired result, and is furthermore dependent on operational parameters, such as injection pressure, and the pressure and velocity of the gas in the nozzle, for example, which operational parameters are beyond the scope of the claims. The Examiner states that this recitation of a desired result is therefore not patentably limiting. To support this, the Examiner states that when a claim includes a “whereby” clause or similar clause, it must contain,

in order to be complete, an enumeration of sufficient elements to perform the function so specified in such clause. The Examiner cites case law as holding that a “whereby” clause is not objectionable. It merely states the result and adds nothing to the patentability of a claim (citing *Israel v. Cresswell*, 76 USPQ 594; *In re Boileau*, 1948 C. D. 83).

Applicant first submits that the claims do provide the elements to provide a three-dimensional flow as recited in independent claim 14 including a divergent nozzle body, and mutually spaced independent separation triggering elements. (This three-dimensional flow is also recited in claim 20). Further, the terms of the “whereby” clause cannot be ignored in determining the scope of the claim. The Examiner is invited to look at more recent, and on-point case law, such as the *Markman* case history in which the terms of the “whereby clause” were used by the District Court and the Federal Circuit to interpret the claim. In this instance, the claimed three-dimensional separation of flow would no doubt be used in claim construction in conjunction with the “spacing” of the triggering elements.

Additionally, Applicant previously provided reasons for distinguishing the claims from Mueller. In response, the Examiner in this Office Action states that Applicant’s arguments merely point out differences in operation of the nozzles of the prior art and that of the claims, but fails to point out how the claims define structurally over the prior art. Applicant submits that this conclusion by the Examiner is based on a continuing refusal to accept that *all* features of a claim are required to be disclosed or suggested by the prior art. Based on this rejection, as well as the rejections of the claims under Pennington and Wilhite (discussed below), the Examiner’s line of reasoning would lead one to believe that as long as the prior art shows a nozzle body and spaced

triggering elements, that any other limitations of the claims are irrelevant. For example, the Examiner's rejection using art that clearly does not disclose the claimed invention, only cites injection holes in Figure 2 of Pennington and the injection orifices in Figure 4 of Wilhite. There is no suggestion in these Figures or their description in their respective specifications of mutually spaced independent separation triggering elements or the spacing feature of the present invention (again, these are discussed further below). Further, it would be understood that these references would not teach the method of claims 20-26.

Applicant points out again that the mutually spaced independent separation triggering elements are neither disclosed nor suggested by Mueller. Further, Applicant submits that Mueller does not disclose a spacing between consecutive triggering elements sufficient to avoid a merger with the injection cross-section of two consecutive jet separation zones. As Applicant explained in the November 24, 2003 Amendment, the elements of Mueller are spaced as a "shock ring" so that, contrary to the *claimed* feature, the Mueller zones of separation form a single ring.

Claims 2, 3, 6 and 14 also stand rejected under 35 U.S.C. § 102(b) as being structurally anticipated by Rannie et al. (citing the injection holes in figures 4 and 8). Claims 2, 3, 4, 6, 14 and 16 stand rejected under 35 U.S.C. § 102(b) as being structurally anticipated by Pennington (citing diametrically opposed injection holes 26 in Figure 2). Finally, claims 2, 3, 5, 6, 14 and 17 stand rejected under 35 U.S.C. § 102(b) as being structurally anticipated by Wilhite (citing the three injection orifices in Figure 4).

Applicant notes that the citation of Pennington and Wihite are new, and that the Examiner states Applicant's amendment necessitated the new grounds of rejection. Applicant's

remarks for Rannie remain the same as in the November 24, 2003 Amendment. Specifically, Rannie does not disclose or suggest spaced independent separation triggering elements.

As far as Wilhite, Applicant reminds the Examiner that its disclosure is not relevant for the reasons *already discussed* by Applicant in a November 26, 2003 Amendment. Specifically, unlike the claimed invention, the points of fluid injection disclosed in Wilhite are located in the throat of the nozzle, from which purpose is to form a “nonstructural throat (34).”

As far as Pennington, this patent was cited, but not applied, as far back as July 24, 2001. With the minimalist reasons for the rejection of the claims over Wilhite and Pennington, Applicant fails to see how the amendments to the claims caused the necessity for a final Office Action, particularly when one of the references was cited and discussed over two years ago as clearly not relevant to the present invention, and the other reference has been known, but not applied for over two and one-half years.

Applicant submits that Pennington in general, and Figure 2 cited by the Examiner suggests, at most, diametrically opposed injection holes 26 (convergent nozzles 26). The only disclosure for use of these nozzles relates to the conventional injection of gases to create a shock wave (see col. 3, lines 45-55). The patent is silent with respect to independent separation triggering elements, or spacing between triggering elements.

Accordingly, Applicant kindly elect to prosecute claims 20-26 and/or to pass the application to issue as quickly as possible.

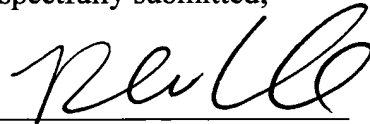
RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/534,196

Attorney Docket No. Q58472

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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